

**SOLID PHASE NATIVE CHEMICAL LIGATION
OF UNPROTECTED OR N-TERMINAL CYSTEINE PROTECTED PEPTIDES
IN AQUEOUS SOLUTION**

ABSTRACT OF THE DISCLOSURE

The present invention provides methods, apparatus and kits for synthesizing assembled peptides and proteins on a solid phase with sequential ligation of three or more unprotected peptide segments using chemoselective and mild ligation chemistries in aqueous solution. Also provided are methods of monitoring solid phase sequential ligation reactions using MALDI or electrospray ionization mass spectrometry of reaction products.